

DOCKET FILE COPY ORIGINAL

RECEIVED

NOV - 4 1997

FCC MAIL ROOM

FreePage Corporation

**P.O. Box 5098
Montauk, NY 11954
516 668 6775**

October 31, 1997

Secretary
Federal Communications Division
1919 M Street NW
Washington, DC 20554

RE: ET Docket 97-214

Dear Sir:

Enclosed please find an original and four copies of Comments on ET Docket 97-214 regarding allocation of frequencies to the Mobile Satellite Service.

Please direct any questions to the undersigned.

Sincerely,



**Matt Edwards
President**

No. of Copies rec'd
List ABCDE

024

ORIGINAL

DOCKET FILE COPY ORIGINAL

Before the
Federal Communications Commission
Washington, DC 20554

RECEIVED

NOV - 4 1997

FCC MAIL ROOM

In the Matter of

Amendment of Part 2 of the)
Commission's Rules to Allocate the)
455-456 MHz, and 459-460 MHz bands)
to the Mobile-Satellite Service)

ET Docket No. 97-214

COMMENTS OF FREEPAGE CORPORATION

INTRODUCTION

1. The Commission has proposed to Amend Part 2 of its Rules to allocate the 455-456 and 459-460 MHz bands to the Mobile Satellite Service ("MSS") on a primary basis for non-voice, non-geostationary satellites ("NVNG") uplinks.

2. FreePage Corporation is the licensee of several 454 MHz Common Carrier mobile stations in the Commonwealth of Pennsylvania (which are coupled with the instant 459 MHz mobile channels), and is in negotiation to acquire an Air-Ground communications station in one of the Western states. Therefore it may be adversely affected by the Commission's action. FreePage has no experience with facilities and services operating in the 455-456 Mhz band, and therefore will limit its comments to issues relating to the 459-460 MHz range.

BACKGROUND

3. The Commission has licensed one-way and two-way radio systems pursuant to Part 22 to licensees to operate mobile facilities (and certain limited fixed facilities) in the range of 459.025 through 459.650 MHz, paired with base station channels at 454.025 through 454.650 MHz (creating a 5 MHz "duplex split").

When fixed facilities are licensed directly to these 459 Mhz channels, they are either for fixed telephony (as in BETRS), or as control channels for Paging systems, providing a link connection. Licensees of 454 Mhz two-way channels, are granted blanket authority to have mobile stations operate on the corresponding 459 MHz return channels. The Commission does not track the number of possible mobile users.

Several dozen waivers have also been granted to Paging Companies to use these channels as primary paging channels, operating with higher power than would normally be expected of mobile units.

AIR-GROUND

4. The Commission has licensed airborne mobile stations to operate in the range of 459.675 through 459.975 MHz to provide Air-Ground telephone service to licensed General Aviation subscribers.

5. The Air-Ground system relies on the 454.675 / 459.675 MHz channel pair for call set-up ("signalling channel"), with actual conversations taking place on one of the other "talk channels".

6. The range of each Air-Ground station is in excess of 250 miles; co-channel facilities are restricted by FCC regulations to distances in excess of 497 miles between stations (621 miles to Canadian stations)(Section 22.813) . The Commission even provides that if over six stations exist with 217 miles of **each other**, it will not accept applications for new facilities in that footprint (Section 22.817).

In short, the services areas are large, and the base-to-mobile distances can be up to 310 miles (or more). Therefore, received signal strength can range from very high to extremely low, depending on the proximity of the aircraft to the receiver site.

7. The telephone instruments installed on each aircraft cost in excess of \$10,000 plus installation. The installation charges can add thousands to such costs. Options such as scrambling add even more. Any change or maintenance on the equipment requires that stringent aircraft maintenance regulations be adhered to; such costs are not insignificant. In short, aircraft owners have millions invested in Air-Ground equipment.

TRADITIONAL MOBILE TELEPHONE AND PAGING

8. The 454/459 MHz IMTS mobile telephone band (named after the widespread IMTS service that preceded cellular) consists of 26 channel pairs, of which 12 were at one time reserved for Bell Operating companies, with the other 14 were available to non-telephone companies ("RCCs"). RCCs were quick to take advantage of the paging opportunities afforded by later Commission actions which permitted both one-way and two-way services on these channels, so that paging services have grown most rapidly in the lower 350 kHz of the 454 MHz band.

9. The Bell channels (the next 300 kHz of spectrum) continued to be lightly used with little paging activity because the telephone companies were better able to sustain continued operating losses from the IMTS services, so this part of the band has recently remained largely unused. Gradually, these channels were turned in to the FCC, or sold to businessmen who converted them to paging (but on the 454 MHz side because of the higher power permitted) or to "community repeater service" as now permitted by FCC regulations. Of course, some BETRS continues to be used in rural areas. Nevertheless, for

the most part, the "Bell" portion of the 454 and 459MHz bands is much more lightly used than the "RCC" portion.

DISCUSSION

10. We concede that the NVNG MSS services have a need for some additional spectrum, but we question the projected number of users and the actual amount of spectrum needed. We oppose, however, the use of any frequencies in the Air-Ground spectrum (459.6375 to 459.9875 MHz) for MSS services. The reasons are many:

11. The spectrum needs to be protected from interference because of the very low signal strengths encountered in the Air-Ground service. The typical aircraft installation has an ERP of only 4 to 25 watts, and although this provides reliable service at several hundred miles, it is only because of the protection from interference created by FCC rules, that signals are useable at these distances.

12. Although the NPRM indicates that the allocations proposed are for Earth-to-Space (MSS uplinks) (para. 1), we believe that the ground stations will receive heavy interference from uplinks located on the near-random ubiquitous basis, judging from the proposed applications (vehicle location, two-way messaging).

13. What is of greater concern is that if the dynamic channel allocation technology proposed for the MSS uplinks does not sample the corresponding 454. Mhz Air-to-Ground uplink channel, it cannot know the channel-pair is in use. Most interference avoidance schemes are based on avoiding terrestrial-to-terrestrial interference modes, but Air-Ground service is not truly a terrestrial-to-terrestrial service, since the transmitting station is up to 300 miles away. Normal ground propagation models do not apply in predicting coverage or interference contours.

14. Even if the MSS stations are assigned to off-centre ("split") channels, the ability of the Air-Ground facilities to reject a local off-channel signal is going to be limited by the ultimate rejection capability of the Air-Ground receivers. The ultimate rejection figure is impacted by the weak signal from the aircraft, which as we pointed out above, can be up to 300 miles away. To put this differently, the 10 kHz guard band between the Air-Ground channels are needed more in Air-Ground service than in any all-terrestrial service because receivers are not ideal devices - they are susceptible to signals outside the normal "passband."

15. An MSS uplink operating within range of an Air-Ground facility could easily "lock up" a talk channel by its presence. The AGRAS protocol (incorporated in the FCC rules by reference) calls for a carrier signal on the receive channel to signify an "in use" condition.

Therefore, an air-ground facility could lose revenues by the constant breaking of the station's "squellch" by interfering MSS uplinks, blocking incoming and outgoing calls. If

the facility is a single-channel station, the entire system would be blocked from usage. (Keep in mind the "squellch" is set at a low threshold because the aircraft signals can be very weak, indeed.)

16. An MSS uplink operating on or near the aircraft signalling channel (459.675 MHz) near an Air-Ground facility, can easily block a "Request to send" from an aircraft, effectively preventing a call being placed through the station, or conceivably corrupting the received data causing wrong numbers and aborted calls.

17. Certain aircraft and base stations have installed encryption equipment to prevent "eavesdropping" on calls. It is possible that MSS interference could cause encrypted calls to default to analogue without the callers being aware privacy was compromised. Certain Government agencies use the Air-Ground system, and they may abandon its usage if this became known, causing economic injury to the carriers.

18. As to the frequencies below the Air-Ground channels (459.650 and lower), we believe that a case might be made that MSS and Land-Mobile services could co-exist, through some sort of sharing scheme, or alternately, by an exclusive allocation from the old "Bell" channels.

19. Sharing would enable the FCC to auction these channels as planned for 1998, although revenues would probably be substantially less. The FCC may want to have MSS proponents compete for this spectrum in the auction arena. On the other hand, since the MSS proponents have requested **shared** spectrum, they may want to explore the alternative of **a smaller slice of exclusive spectrum** in the 459.375 to 459.650 range, which we believe could be accomplished by relocation of the 282 licensed users of the 12 "Bell" channels.

20. The MSS industry (with its 40 million proposed users!) should be easily able to finance a relocation of those users to comparable spectrum, with fair compensation paid for the channels. (If one ignores the dozens of experimental licenses on these 12 channels, on average there are only 23 licenses issued on each. This also ignores possible 459 MHz mobiles licensed to the 454 MHz carriers providing two-way service) Since new terrestrial based services will be purchasing such spectrum at the auctions, why should the MSS be exempt from participating in the action process?

21. The Commission proposes co-primary status for the MSS stations, with interference protection controlled by WRC footnote S5.286B-- "stations in this band are not to cause harmful interference to, or claim protection from, stations in the Fixed or Mobile services." The Commission concluded that effectively, new MSS facilities would be secondary to the incumbent services (Para. 10). Nevertheless, it proposed to make the MSS stations co-Primary with the incumbent facilities, **if** interference-avoidance techniques can be found. It expects such technology to be developed; interestingly, the type of technology would be different for the Air-Ground frequencies than for the Land-Mobile channels.

22. As we stated above, we are not aware of any such technology that can determine probable interference from a mixture of ground and airborne stations, which at the same time is itself a mobile (not fixed).

CONCLUSION

23. We oppose strongly the use of the frequencies above 459.6375 Mhz for any shared service because of its incompatibility with the existing Air-Ground (General Aviation) service.

24. For the reasons given above, we believe that the lower end of the 459 Mhz range (459.0125 to approximately 459.3875 MHz) is too heavily occupied by incumbents, to make this a viable planned spectrum allocation for MSS.

25. We urge the Commission to explore the actual current usage of the spectrum between 459.400 and 459.650 (approximately) to see if an exclusive band segment might be found or created by relocation of incumbents. If an exclusive band could be created, the total spectrum need would be substantially less.

26. The thousands of Air-Ground telephone users have only recently been blessed with a fully-automatic system, since implementation of the AGRAS requirement only took place on January 1, 1996. Prior to that date, systems were not required to be automatic. The aircraft owners and the carriers spent millions of dollars on upgraded equipment to meet the deadline set in 22.819, only to find that now, less than two years later, the Commission is proposing to punish them for their efforts and expenditures.

Respectfully submitted
FREEPAGE CORPORATION

By: 
Matt Edwards, President